

10/031,358

In the Claims:

Please amend claims 21, 22 and 23 as follows in which the claim additions are shown by underlining and/or the claim deletions are shown by strikeout. Please enter the amended claims into the record of this case.

In the Abstract:

Please enter the following Abstract of the Disclosure, typed on a separate sheet and accompanying this response, into the record of this case.

[005] Drive systems for vehicles customarily comprise an internal combustion motor as the driving machine, a subsequent ~~manual or automatic~~ transmission and a friction clutch placed between the internal combustion motor and the transmission or again, comprise a hydrodynamic converter placed between the internal combustion motor and the transmission. The friction clutch or the converter are burdened with losses and present energy losses in the drive train. ◆

[009] In accord with the invention, and with an electrodynamic drive system for a vehicle, it is proposed to place a planetary gear drive between a driving machine and a ~~manual or automatic~~ transmission, which said planetary gear drive encompasses the three elements, sun gear, internal gear, and planetary carrier. Of these three elements, a first element is connected to the transmission, a second element is bound to the driving machine, and a third element is coupled with at least one electric motor. An advantageous construction possesses a control, which can regulate the at least one electric motor in the 4-quadrant operation. A further embodiment possesses a clutch between two elements of the planetary drive for the lockup or bypass of the planetary drive, which in one type of assembly includes a dog clutch. In an additional arrangement, an overtake-free wheeling device is placed between the driving machine and the electrodynamic drive system. In yet another embodiment, several electric motors in combination act upon one of the elements of the planetary drive. In an advantageous embodiment, a lock-up torque converter is provided for the formation of torque support during the startup procedure. This can be carried out by the simultaneous engagement of two shifting stages in the transmission, by means of a parking lock, by a braking apparatus of the vehicle and a simultaneously engaged gear stage on an input shaft of the transmission. In one embodiment form, on one shaft of the planetary drive a brake retard is placed. ◆

[021] Fig. 1 presents a sketch of the principles of the invented drive system 2. At the output of a drive source 4, a flywheel 6 is installed, which, by means of a shaft 8, is connected with the internal gear 10 of the planetary gear drive 12. The planetary drive 12 is placed in a part 18 of the housing 14 of a manual or automatic transmission 16. In an additional part 20 of the housing 14, an electric motor 22 is provided. Within yet another part 24 of the housing 14 are located the known elements of a transmission 16, in regard to which, no further discussion is necessary. The parts 18, 20, and 24 can also be separate housing elements combined into an entire housing 14. The shaft 8 is in the part 20 of the housing 14 and rotatably secured in bearings 26. The input shaft 28 of the transmission 16 is likewise rotatably secured in bearings 30 and is affixed to and turns with the planet gear carrier 32 of the planetary gear drive 12. On the bearing bolts 34 of the planetary carrier 32, the planetary gears 36 are rotatably secured. The planetary carrier 32 possesses further a clutch toothing 38 of a torque converter 40, with which the planetary gear carrier 32 is rotatably affixed with a shaft housing 14, also possesses a clutch toothing 46, which, by means of a shifting element 48, can be brought into a rotatingly meshes with coupling toothing 38. Thereby, a bypassing of the planetary gears 12 is achieved. The planetary gears 36 mesh in their toothing both with the internal gear 10 as well as the sun gear 50, which is rotatably affixed with a shaft 42. The shaft 42 possesses in part 18 of the housing 14, the rotor 52 of the electric motor 22. The stator 54 of the electric motor 22 is seated in the housing 14.

Page 6Reference number and items

- 2 Drive system
- 4 Drive source
- 6 Fly-wheel
- 8 Shaft
- 10 Internal gear
- 12 Planetary gear drive
- 14 Housing
- 16 ~~Manual or automatic~~ Transmission
- 18 Housing Part
- 20 Housing Part
- 22 Electric motor
- 24 Housing Part
- 26 Bearings
- 28 Input shaft
- 30 Bearings
- 32 Planetary carrier
- 34 Bolts for bearing
- 36 Planet gear
- 38 Tothing on gear
- 40 Bypass clutch
- 42 Shaft
- 44 Bearings
- 46 Clutch tothing
- 48 Shifting element
- 50 Sun Gear
- 52 Rotor
- 54 Stator
- 56 Brake retard
- 58 Overrunning clutch
- 59 Overrunning clutch